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### N-terminal truncated telomerase

FIG. 11A



### Truncated protein :

*FIG. 11B*



### Truncated protein

FIG. 11C



### Truncated protein

*FIG. 11G*



## Altered C-terminus protein

FIG. 11H

Protein that lacks motif A

ATGCCGGCGGCTCCCCGGCTGCCGAGCCGTGGCGTCCCCTGGCTGCCAAGCCACTACCGCGAGGTGCCTGCCCTGGCCACGTTGGTG  
 M P R A P R C R A V R S L L R S H T R E V L P L A T F V  
  
 CGGGCGCTGGGGCCCAAGGGCTGGCGGCTGGTCAGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGG  
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A  
  
 CGGGCGCTGGCGCAGGGTGTCTGGCAAGGGAGCTGGTGGCGGCTGGCGGAGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 P S F R Q V S C L K E L V A R V L Q R L C E R G A E N V L A F G P A L L D G A R  
  
 CGGGGGCCCCCGAGGGCTTCACCAACGGTGGCGAGCTACCTGCCAACACGGTGGCGAGCGACCTGCCGGGAGCGGGGCTGGCGGCTGGCGGCTGGCG  
 G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V  
  
 GCTGGGTCACCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P  
  
 ACACGGCTAGTGACCCCCAGGGCTCTGGATGCCAACCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 H A S G P R R R L G C E R A W N H S V R E A G V F L G L P A P G A R R R G G S A  
  
 CAGCCGAAGTCGGCGGCTGGCAAGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R  
  
 TGGTTCCTGCTGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 G F C V V S P A R P A Z E A T S L E G A L S G T R H S H P S V G R Q H A G P P  
  
 ATCCACATGGGGCACACGTCCTGGACACCGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 S T S R P P P R P W D T P C P P V Y A Z T K H P L Y S S G D K E Q L R P S F L L S  
  
 CTCTCTGAGGCCAGGCCAGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 S L R P S L T G A R R L V Z T I F L G S R P W M P G T P R R L P R L P Q R Y W Q  
  
 AATGGGGCCCCCTGGCTGGGACCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 M R P L P L Z L L G N H A Q C P Y G V Z L K T H C P L R A A V T P A A G V C A R  
  
 CGAGAAAGCCCCAGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 S K P Q G S V A A P E Z E D T D P R E L V Q L L R Q H S S P W Q V Y G F V R A C  
  
 CCTGGGCGCCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 L R R L V U P P G L W G S R H N S R R P L R N T K P I S L G K H A K L S L Q E L  
  
 GACGTGGAAAGATGAGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 T W K H S V R D C A N L R R S P G V S C V P A A E H R L R Z E I L A K F L H W L  
  
 GATGAGTGTGACCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 M S V Y V V S L R S P F V Y V T E T T F Q K N R L F P Y R K S V W S K L Q S I G  
  
 AATCAGACAGCACTGGAGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 I R Q H L K R V Q L R S E A V R D H R E A R P A L T S R L R P I P K P D  
  
 CGGGCTGGGGGATTGTGAAACATGGACTACCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E  
  
 GCGGGCGGCGGCCCCCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 R A R R P G L L G A S V L G L D D C H R A W R T P V L R V R A Q D P P P E L Y F  
  
 TGTCAG  
 V K  
  
 GACAGGGCTACGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q  
  
 GAAGGGCGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D  
  
 TCGCTCTGCTACGGAGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 A V V I E Q S S S L N E A S S G L F D Y F L R P M C H H A V R I R G K S Y V Q C  
  
 CGAGGGGATGGGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 Q G I P Q G S I L L S T L C S L C Y G D M E N K L F A G I R R D G L L R L V D  
  
 TGATTCCTGGCTGGCGACCTCACCTACCCACGGAAAACCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 D P L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P  
  
 TGTTAGAACAGGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 V E D E A L G G T A P V Q M P A H G L P P W C G L L L D T R T L E V Q S D Y S S  
  
 CTATGGGGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 Y A R T S I R A S L T P N R G P K A G R Y M R R K L P G V L R L K C H S L F L D  
  
 TTGGCAGGTGAAAGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 L Q V N S L Q T V C T N I Y K I L L L Q A Y R P H A C V L Q L P F H Q Q V W K N  
  
 CCCACATGGGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 P T F F L R V I S D T A S L C Y S I L K A K N A G M S L G A K G A A G P L P S E  
  
 GGGCGTGCAGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 A V Q W L C H Q A F L L K L T R H R V T Y V P L G S L R T A Q T Q L S R K L P  
  
 GGGGCGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 G T T L T A L E A A A N P A L P S D P K T I L D  
  
 CTGTCACGGGGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 GAGTGTCGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 CAGGGAGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 GGACCCGGGCTGGCGGCTGGCGGCTGGCGGCTGGCGGCTGGCG  
 AATACTGAATATATGAGTTTCAGTTTCA

**FIG. 111**



Truncated protein that lacks motif A

FIG. 11J



Lacks motif A and altered C-terminus

FIG. 11K



## N-terminal truncated telomerase (ver. 2)

FIG. 11L



### Truncated protein 1 (ver. 2)

ATGCCCGCGCGCTCCCCCTGCCAGCCGTGGCTCCCCCTGCCAGCCACTACCGGAGGTGGCTGCCCTGGCACGGTGG  
 M P R A P R C Z A V R S L L R S H X R E V L P L A T F V  
 CCGGGCTCTGGGCCCCCAGGGCTGGCGCTGGTCAGCGGGGGACCCGGCGCTTCCCCGGCTGGCCAGTGCTGCCCTGGACGCA  
 R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A  
  
 GGCCTCCCCGGGTGGCGCTGGGGTGGGGGAGCCAGCGCATGCCAGAGCGCAGCCAGGGACTCAGGGCGCTTCCCCGGCAGGTG  
 G L P G V G V B L G L R A A G G N Q R H E S G D S G R F P R E  
 A S P G S A S G W G V G R P G T S D M R R A A Q A T Q G A S P A G  
 P P R G R R P A G V E G G R G E P A T C G E Q E R R R L R A L P P P Q V  
  
 CCCCCCTCCGCGCAGGTGTCCTGCCAGAAGGAGCTGGTGCGGGAGTGCTGCCAGAGGTGTCGGACGCCGGCGRAAGAACGTC  
 P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G P A L L D G A R  
  
 CGGGGGCCCCCGAGGCTTCACCAACCGTGCGCAAGCTACCTGCCAACCGCGTACGGGGGAGCCGGCTGGGGCTGCTGCC  
 G G P P B A F T T S V R S Y L P N T V T D A L R G S G A N G L L L R R V G D D V  
  
 GCTGGTTCACTCTGGCACCGCTGCCGGCTCTTGTGCTGGCTCCAGCTGCCAACCGGTGCGGCCCTACCGGTGCGGCC  
 L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P  
  
 ACACGGCTAGTGGACCCCAGGGCTCGGATGCCAACGGCTGGAACCATAGCTCAGGGAGGGCTCCCTGGGCTGCCAG  
 H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A  
  
 CAGGGAGACTGCCGTGCCAACAGGGCCAGGGCTGGGCTGCCCTGAGGCCAGGGCTGGGAGGGCTCTGGGCC  
 S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R  
  
 TGGTTCTGTTGGTGTACCTGCCAGACCCCGAGAGCCACTCTTGGGGTGGCTCCAGGGACTCCCA  
 G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P  
  
 ATCCACATEGGGGCACCGTCCCTGGACACCCCTGTCTCCCGTGTACCCGAGACACTCTCTACTCT  
 S T S R P P R P W D T P C P F V Y A Z T K H P L Y S S G D K E Q L R F S P L L S  
  
 CTCTCTGAGGGCCCGCCCTGACTGGGCTCTGGAGGCTGTGAGAACCATCTTCTGGGCTCTGGCC  
 S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q  
  
 AATGCCGGCCCTGTCTGGAGCTGCCCTGGGAACACCGCCAGTGGCCCTACGGGCTCTCTCTGAGAG  
 M R P L S L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R  
  
 CGAGAAGCCCAAGGGCTCTGG  
 E K P Q G S V A A P E S S O T D P R R E V Q L R Q H S S P W Q V Y G F V R A C  
  
 CCTCTGGGGGGCTGTGG  
 L R R L V P P G L W G S R H N Z R R F L R N T K F I S L G K H A K L S L Q E L  
  
 GACCTGGAAAGATQAGCCGTGGGGACCTGGCTGGCTGG  
 T W K N S V R D C A W L R R S P G V G C Y P A E H R L R E E I L A K P L H W L  
  
 GATGAGTGTCACOTCCTGGAGCTGCTCAAGTCTTCTTATGTCACGGAGAACCTTCTAAAGAACAGGCTTCT  
 M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G  
  
 AATCACACAGCACTTGAAGAGGGTGCAGCTGGGGAGCTGTCGAACACAGGCTCACGCCAGCATCGGAAG  
 I R Q H L K R V Q L R E L S E A Z V R Q E R A R P A L L T S R L R F I P K P D  
  
 GTGGCTGTGCTTGGTTAACTCTCTTTAACAGAA  
 V A V L H F T P L P N Q K  
  
 CGGGCTGGGGGGATTGTGAACATGGACTACCTGCTGGAGCCAGAACCTCCAGAGAAAAGAGGGCCAGGGCTCACCT  
 G L R P I V N M D Y V V G A R T P R R E K R P S V S P R G

### Truncated protein 2 (ver. 2)

GTCCTACGTCCAGTG  
V L R P V

CCAGGGGATCCCCGAGGGCTCCTACCTCTCCACCTGCTCGCACCTGTGCTACGGGACACTGAGAACACAGCTGTTGCGGGGATTCGGGGGACGGGCTGCTCTCGGTTGGCTGA  
P G D P A G L H P L H A A L Q P V L R E R E G S Q A V C G D S A G R A A P A P V G  
  
TGATTTTCAAGGGTGACACCTCACCTCACCCACGGCAAACCTTCTCAGGACCTTGCTCGAGGTGTCCCCTGAGTAATGGCTGGCTGGTGAACTGGCGAAGAACAGTGCTGAACATTCCC

FIG. 11N



### Truncated protein 3 (ver. 2)

*FIG. 11R*



## Altered C-terminus protein (ver. 2)

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CGCTGGCCACGATCGTG

FIG. 11S

### Protein that lacks motif A (ver. 2)

FIG. 11T

GGACCCCTGGGAGCTCTGGGAATTGGACTGACCAAAAGGTGTCCCCCTGTACACGCCGAGGACCCCTGCACCTGGATGGGGGTCCTGTGGCTCAAATTGGGGGGAGTGCCTGTGGAGTAA  
AATACTGAATATATGAGTTTTCACTTTGA



***FIG. 11U***

## Truncated protein that lacks motif A (ver. 2)

FIG. 11V



Lacks motif A and altered C-terminus (ver. 2)

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FIG. 11W